Technology Administration

- Technology Infrastructure
- Broadening Trade
- Critical Infrastructure

Enabling Legislation

The Technology Administration (TA) comprises the Office of the Under Secretary and Office of Technology Policy (US/OTP), the National Institute of Standards and Technology (NIST), and the National Technical Information Service (NTIS).

US/OTP operates under the authority of 15 U.S.C. 3704, which establishes the positions of Under Secretary for Technology and Assistant Secretary for Technology Policy and provides the basic authority for preparing technology policy analyses, industry studies, policy experiments, and associated reports.

NIST operates under the authority of the National Institute of Standards and Technology Act (15 U.S.C. 271), which modifies The Organic Act that created the National Bureau of Standards (NBS) in 1901. Several important legislative changes were adopted in 1988. In addition to renaming NBS as NIST, the changes include the establishment of Regional Centers for the Transfer of Manufacturing Technology (15 U.S.C. 278k) and the establishment of the Advanced Technology Program (15 U.S.C. 278n). Separately, the National Quality Program was established and its functions assigned to NIST by the Malcolm Baldrige National Quality Improvement Act of 1987 (15 U.S.C. 3711a).

NTIS operates under the authority of 15 U.S.C. 3704b, which authorizes NTIS to establish and maintain a permanent repository of non-classified scientific, technical, and engineering information; to make selected bibliographic information products available to depository libraries; to collect, translate, and disseminate unclassified foreign scientific, technical, and engineering information; to implement new methods or media for the dissemination of scientific, technical, and engineering information; and to maintain the responsibilities enacted in 1950 (at 15 U.S.C. 1151).

Bureau Context

The Technology Administration's mission is to work with U.S. industry to maximize technology's contribution to U.S. economic growth by maintaining and improving key components of the Nation's technological infrastructure; fostering the development, diffusion, and adoption of new technologies and leading business practices; creating a business and policy environment conducive to innovation; and disseminating technical information.

TA is an integral part of the Department of Commerce team. **In pursuing its mission and responsibilities, TA assists the Department in building for the future and promoting U.S. competitiveness in the global marketplace by strengthening and safeguarding the Nation's economic infrastructure, as well as by providing cutting-edge science and technology and a world-class information base.**

Priorities and Initiatives

Broadening Trade – TA continues to help stimulate technological innovation and determine measurements and standards to improve the Nation's competitive base and expand trade opportunities.

Technology Infrastructure – By seeking to improve the quality of science education, TA supports the initiative to create a technology- and knowledge-based society.

Critical Infrastructure Program - TA supports the national effort to assure the security of the increasingly vulnerable and interconnected infrastructures of our nation.

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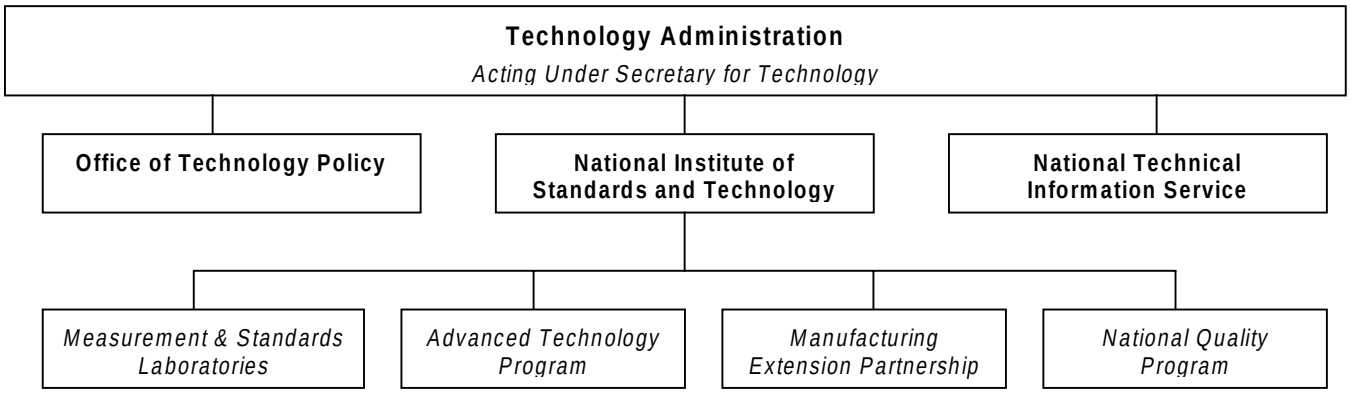
Organizational Structure



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Measures and Targets Summary

Measure	FY 2000 Target
Goal: Assure and improve measurements and standards*	
Standard reference materials available	1,330
Standard reference data titles available	64
Number of items calibrated	3,250
Technical publications	2,150
Goal: Stimulate advanced technologies	
Cumulative number of technologies under commercialization	180
Cumulative number of patents filed	900
Cumulative number of publications	690
Goal: Assist small manufacturers	
Increased sales attributed to MEP assistance	$520 Million
Labor & material savings attributed to MEP assistance	$59 Million
Capital investment attributed to MEP assistance	$379 Million
Inventory savings attributed to MEP assistance	$75 Million
Goal: Promote performance and quality management	
Number of applications per year to MBNQA and Baldrige-based state quality awards	1,395
Goal: Analyze and develop technology policies	
Reports published annually	5
Goal: Collect and disseminate information	
Number of items in archive	3.0 Million
Documents reproduced from electronic media	0.29 Million

* In addition to the above measures and targets, Annual peer review of the technical quality and merit of the NIST MSL, conducted by the NRC

Technology Administration

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Resource Requirements Summary

$909,054 Thousand

3,653 FTE

$63,918 Thousand

TA - National Institute of Standards & Technology

Assure and improve measurements and standards

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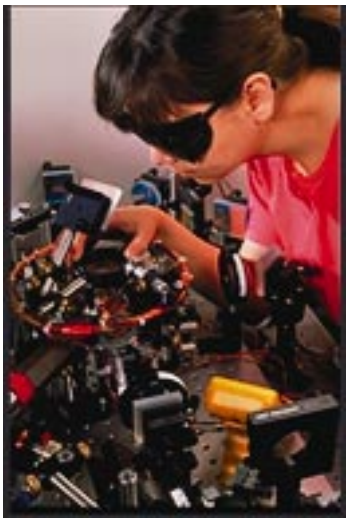
Measurement and Standards Laboratories: Provide technical leadership for the Nation's measurement and standards infrastructure, and assure the availability of essential reference data and measurement capabilities.

Rationale for / Comments on Performance Goal:

The NIST *Measurement and Standards Laboratories* (MSL) develop and deliver measurement techniques, reference data, test methods, standards, and other types of infrastructural technologies and services that provide a foundation for industry in all stages of commerce: research, development, testing, production, and marketing. NIST laboratories also support U.S. firms in the global marketplace by working to eliminate trade barriers associated with different national standards, testing, and certification requirements.



Since its establishment in 1901 as the National Bureau of Standards, NIST has collaborated closely with industry to anticipate and address the Nation's measurement, standards, and technology needs. NIST's extensive and diverse interactions with industry provide an important source of information about the quality, direction, and future demand for NIST products and services.

The NIST MSL supports three initiatives. In the trade arena, measurements and standards facilitate not only domestic commerce but also international trade. In FY 2000, NIST will expand both its international standards program to help ensure open trade (e.g., through the elimination of standards as a non-tariff trade barrier) and its technical program to support changing U.S. industries (i.e., through the Critical Infrastructure Program initiative).

NIST also will seek to improve the quality of science education—a critical element in preparing communities for a technology-based society.

NIST evaluates its performance and plans its work in part through direct customer feedback, but also through three distinct evaluation mechanisms: peer review and other forms of external assessments; economic impact studies; and quantitative output tracking. Each of NIST's programs uses a different mix of these three evaluation mechanisms, tailored to each program's distinct goals, outputs, and management needs. Taken alone, no individual measurement mechanism provides a singularly robust and comprehensive source of performance evaluation data. Taken together, however, all three evaluation mechanisms—combined with continual feedback from customers—collectively provide NIST management as well as external stakeholders with a highly detailed, rich and reliable set of performance data encompassing NIST's strategic goals.

TA - National Institute of Standards & Technology

Assure and improve measurements and standards (cont.)

- Technology Infrastructure
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Measure: Qualitative assessment and performance evaluation using a peer review process

Data Validation and Verification

Data collection:	NRC Board on Assessment panels observe and analyze each MSL lab.
Frequency:	Annual
Data storage:	NRC
Verification:	NRC independence and high technical capability; internal NRC quality controls.
Comments:	Validity limitations are those intrinsic to peer review: panel judgments are not quantifiable; assessments are highly contextual and detailed; findings are not cumulative.

Since 1959 the NIST Measurement and Standards Laboratories have been reviewed annually by the National Research Council. The current NRC Board on Assessment of NIST Programs is composed of approximately 150 scientists and engineers, organized into seven panels (one for each of the seven NIST laboratories) plus two sub-panels for specialized programs. Panel reviews are reported at the Division level (the major organizational unit for the laboratories), and build upon assessments of research processes at the project and program levels.

The NRC Board on Assessment review is independent, technically sophisticated, and extensive. Each panel conducts a two- to three-day on-site review of an individual laboratory's technical quality, with particular attention to the following factors:

- The technical merit of the laboratory programs relative to the state-of-the-art
- The degree to which the laboratory programs conform to their mission;
- The effectiveness with which the laboratory programs are carried out and the results disseminated
- Insofar as they affect the quality of the technical programs, the adequacy of the laboratories' facilities, equipment, and human resources

NRC panel reports for each laboratory become the basis for a comprehensive annual peer review report of the NIST MSL. The NRC report covering FY 1998 was completed in October 1998. The NRC report provides each laboratory not only with an external quality assessment, but also with a valuable source of information for its own performance assessment, planning, and management functions. To complement this information, the MSL regularly compiles benchmarking data that compare specific NIST measurement capabilities and practices relative to those of other national metrology institutes (NMIs), measurement laboratories, and industry measurement needs.

Measure: Economic impact studies

Data Validation and Verification

Data collection:	Research is contracted to economic and technical experts, who generate quantitative estimates and qualitative information using performance data gathered through industry surveys and field research. Project cost data are supplied by NIST.
Frequency:	Intermittent.
Data storage:	Contractors collect and maintain all data. Survey results, cost data, and all calculations are presented in final reports.
Verification:	Data are gathered and analyzed by highly qualified economists and technical specialists using well-developed research methods and standard economic and business analysis metrics, as specified and monitored by NIST.
Comments:	Assessment results are intermittent and not cumulative; elements of study population often are too diffuse to measure; availability and quality of industry data often are uneven; there are methodological qualifications specific to each measure; the outcomes are specific to each project (e.g. limited comparability); and the studies are expensive.

TA - National Institute of Standards & Technology

Assure and improve measurements and standards (cont.)

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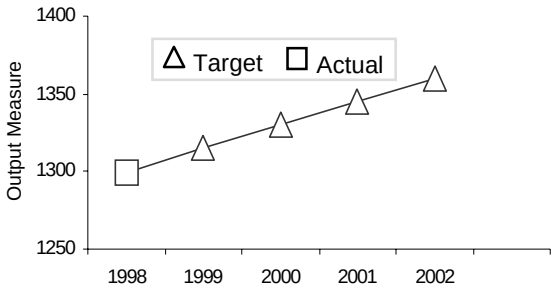
NIST augments the performance data obtained through peer review and benchmarking with formal microeconomic impact assessments of the long-term impacts of specific research projects. These studies provide qualitative assessments and quantitative estimates of the economic impacts resulting from the different types of technology infrastructure that NIST provides to U.S. industry. These impacts include increases in R&D efficiency and manufacturing productivity, enhanced product quality, and lower market transactions costs. Where data allow, quantitative estimates are provided in one of several generally acceptable forms: net present value, benefit-cost ratio, or internal rate of return.

NIST has been conducting economic impact studies on a regular basis since 1992. In addition to demonstrating consistently strong social rates of return and positive benefit/cost ratios, these studies provide NIST management with detailed information that is useful for evaluating current and prospective research projects and for supporting strategic planning processes.

Currently, about five new impact studies are initiated annually, focusing on projects with substantial histories. Because such studies are conducted intermittently and at the project level, they cannot be used to generate cumulative quantitative impact data for annual GPRA reporting.

In part due to the long time frame and intermittent character of economic impact assessments, NIST also tracks MSL activities through a series of quantitative output metrics. These measures, a portion of which are presented below, convey useful information to management regarding the generation and significance of particular NIST products and services. Although individually significant, these measures do not comprehensively represent the output from NIST laboratories, nor do they provide information about the quality or impact of particular products and services. Their interpretation requires careful attention to the meaning and context of each measure.

Measure: Standard reference materials (SRMs) available



Data Validation and Verification

Data collection:	NIST Technology Services.
Frequency:	Ongoing
Data storage:	All product and service data, along with committee participation lists, are regularly recorded and compiled by NIST's Technology Services organization.
Verification:	Data represent direct and verifiable counts of NIST products, services, and staff activities.
Comments:	Industry-specific business conditions and technological developments affect the level and range of demand for NIST products and services over time.

To support the Nation's established measurement needs, NIST provides standard reference materials (SRMs), reference data, and instrument calibration services. These products and services represent direct output metrics for NIST's measurement science research activities. Moreover, the technical expertise represented by these metrics supports effective participation in national and international standards organizations. Through these organizations NIST supports the harmonization of measurement and standards practices, which in turn promotes international trade and domestic economic growth.

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Assure and improve measurements and standards (cont.)

- **Technology Infrastructure**
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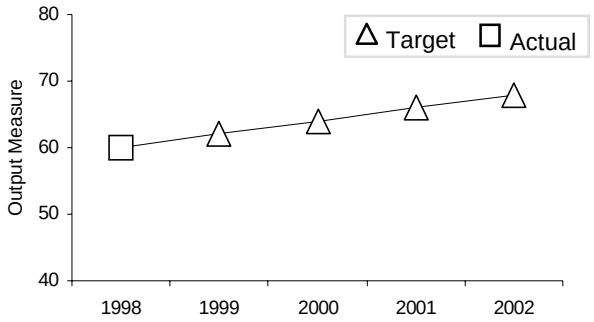
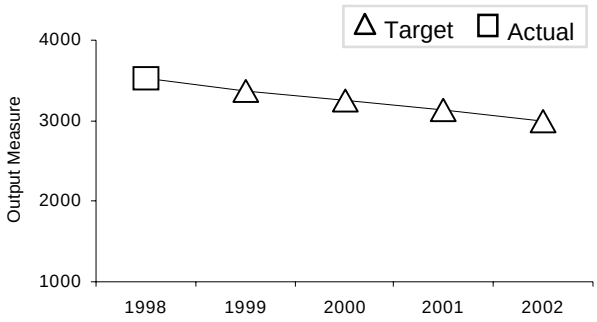
Measure: Standard reference data (SRD) available



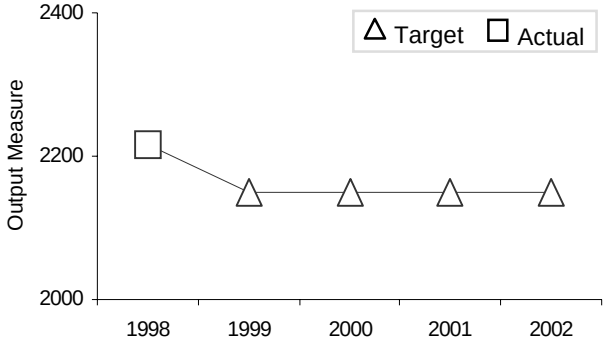
Measure: Number of items calibrated



Data Validation and Verification

Data collection: NIST Technology Services.
Frequency: Ongoing
Data storage: All product and service data, along with committee participation lists, are regularly recorded and compiled by NIST's Technology Services organization.
Verification: Data represent direct and verifiable counts of NIST products, services, and staff activities.

Measure: Technical publications produced



Data Validation and Verification

Data collection: NIST Washington and Boulder Editorial Review Boards.
Frequency: Ongoing
Data storage: Publications data are gathered and maintained by Washington and Boulder Ed. Review Boards.
Verification: Data represent direct and verifiable counts of NIST products, services, and staff activities.

Technical publications are a primary product of NIST's research activities in measurement science and technology. Many of these publications appear in prestigious scientific journals and withstand peer review by the scientific community. Others appear in technological forums where measurement standards and technologies developed by NIST staff (at times in collaboration with private sector partners) are disseminated. NIST uses publications as one of the mechanisms to transfer the results of its work to the U.S. private sector or to other government agencies that need cutting-edge measurements and standards.

TA - National Institute of Standards & Technology

Assure and improve measurements and standards (cont.)

- **Technology Infrastructure**
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Objectives and Key Strategies

Objectives	Key Strategies
Anticipate and address the Nation's most important needs for physical and information-based measurements and standards.	• Work with industry, government, and the scientific community to identify the science and technology required for a robust measurement and standards infrastructure. • Perform laboratory research that develops the measurement tools, data, and models for advanced science and technology. • Create and maintain world-class measurement facilities to support U.S. industry in the 21st century.
Strengthen the national system of standards, measurement, measurement traceability, and conformity assessment.	• Promote the efficient delivery of measurement services to meet both current and future infrastructure needs. • Foster the development of domestic voluntary standards needed by government and industry. • Stimulate the development of a robust private conformity assessment system in the United States.
Provide leadership in harmonizing international measurements and standards to facilitate international trade.	• Compare measurement systems and practices with other industrialized countries, to assure consistency and eliminate measurement-related reasons for duplicate testing. • Foster international voluntary standards needed by government and industry. • Collaborate with international standards organizations and counterpart laboratories in researching and developing standards.

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Assure and improve measurements and standards (cont.)

- **Technology Infrastructure**
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Cross-Cutting Issues

- NIST provides research and services in measurement and standards to almost every other agency in the Federal government with scientific missions, contracted through specific Interagency Agreements or Memoranda of Understanding. NIST measurement research, services, and facilities have long contributed to national defense and security, to the nationwide safety and quality-assurance systems that ensure the accuracy of health care measurements, to the accuracy of environmental measurements, and to law enforcement standards.
- NIST plays a large role in a wide variety of intragovernmental and government-industry coordination committees. For example, NIST has leadership positions on the committees, subcommittees, and working groups of the National Science and Technology Council (NSTC).

External Factors

- Industry-specific business conditions and technological developments affect the level and range of demand for NIST products and services over time.

Resource Requirements

MSL request: $284,576 thousand, plus estimated reimbursable obligations of $101,076, construction of research facilities request $106,798.

2,023 FTE (plus 711 reimbursable FTE and 33 FTE for construction of research facilities request) / Skills: MSL professional staff consists of 53% Ph.D., 19% MA/MS, 19% BA/BS

Estimated MSL IT obligations: $49,004 Thousand

TA - National Institute of Standards & Technology

Stimulate advanced technologies

Advanced Technology Program:
Accelerate technological innovation and the development of new technologies that underpin future economic growth.

Rationale for /Comments on Performance Goal:

Market pressures often deter firms from investing in particular types of technology. For instance, private industry never has accounted for a large percentage of the Nation's basic R&D, because firms must be able to earn appropriate returns within a time frame and at a level satisfactory to investors. For the same reasons, industry tends to avoid investing or significantly under-invests in certain types of enabling technologies: infrastructural technologies, which require distinct competencies and are broadly applied; multi-use technologies, which benefit multiple segments of an industry or group of industries; and high-potential breakthrough technologies, which typically involve risk levels and time frames that far exceed the horizons of individual firms. In each of these areas, the financial and market interests of individual firms tend to produce a suboptimal level of investment for the economy and society as a whole. To address this problem, the Advanced Technology Program (ATP) works with industry to identify and promote investment in high-risk technologies with significant potential for broad-based economic benefits.

In addition to program guidance provided by the Visiting Committee on Advanced Technology and NIST management, the ATP evaluates its performance through a combination of methods including economic assessments of project developments and long-term impacts, estimates of interim outcomes, status reports on completed projects, and output tabulations.

Measure: Economic impact studies

Data Validation and Verification

Data collection:	Data collected for ATP's Economic Assessment Office databases (see output metrics section below) are supplemented with data collected by external economic and technical experts, who generate qualitative information and quantitative estimates using data from field research and other public and private databases.
Frequency:	Intermittent.
Data storage:	Research methodology and results are presented in final reports; some data are integrated with existing ATP databases.
Verification:	Data collected and analyzed by contractors, as well as the methodology and results of the data analysis, are rigorously reviewed by NIST economists and technical experts as well as by external experts in evaluation.
Comments:	The time period from ATP funding to economic impacts is long and entails substantial market and technological uncertainties at the point impact studies are undertaken. Few projects are sufficiently mature to assess their long-term impacts; in some cases, projections are used to estimate outcomes and potential economic impacts. As with project-level impact assessments in general: results are intermittent & not cumulative; elements of the study population often are too diffuse to measure; availability and quality of industry data are uneven; there are methodological problems specific to each measure; the research results are specific to each project (e.g. limited comparability); and the studies are expensive.

TA - National Institute of Standards & Technology

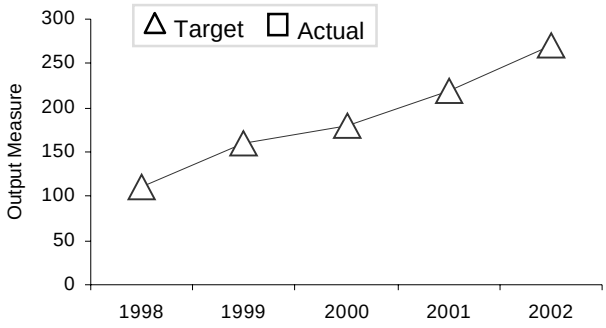
Stimulate advanced technologies (cont.)

Evaluation activities include planning, developing evaluation models and methods, collecting data and constructing databases, and conducting micro- and macro-economic case studies, statistical and econometric analyses, and other forms of assessment and inquiry.

Fully successful ATP projects are expected to contribute significantly to the U.S. scientific and technical knowledge base, yield private benefits to the innovators, and, ultimately, yield benefits to others in the Nation—through market, knowledge, and/or network spillovers extending well beyond the direct award recipients. Significant impacts can result from even partial successes. To assess these outcomes, ATP conducts or contracts economic impact studies that seek to quantify private rates of return, social rates of return, and public rates of return (the social-rate-of-return component attributable to the ATP). Evaluation studies address single projects and groups of projects, as well as issues of special concern to policy makers and program management.

To complement its highly focused economic impact studies, ATP also measures and evaluates a wide range of broader output indicators. Below are data for three key output metrics—the number of technologies commercialized as a result of ATP project funding, as well as the number of patents and publications generated by ATP-funded projects.

Measure: Cumulative number of technologies under commercialization



Data Validation and Verification

Data collection: Data are gathered from the portfolio of ATP project participants since 1993 through an electronic survey instrument under ATP's Business Reporting System. Separate portfolio-based telephone surveys are conducted of project participants funded prior to 1993 and for post-project data collection.

Frequency: Annual over the course of ATP funding for projects funded since 1993; intermittent for projects funded prior to 1993; every two years (up to six years) after ATP funding ends.

Data storage: Data are maintained by ATP's Office of Economic Assessment in an integrated set of databases covering both descriptive information about the funded organizations and survey responses for all participants in ATP-funded research projects.

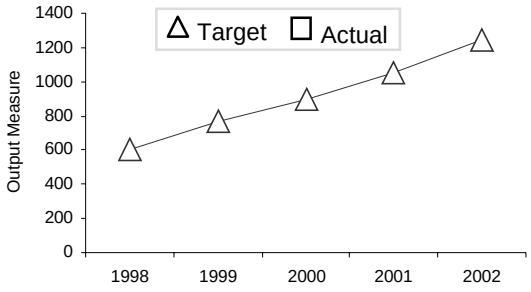
Verification: Business Reporting System electronic survey and other telephone survey instruments represent a standardized reporting system. Surveys record client responses to questions concerning business plans, progress, early economic impacts, and other effects of ATP funding. Data are reviewed for completeness and subjected to validity tests.

Comments: The ATP's Office of Economic Assessment databases comprise a wide spectrum of types of information for *use* in project management, general ATP oversight, and economic evaluation.

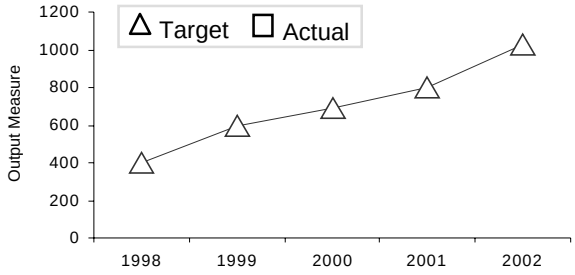
TA - National Institute of Standards & Technology

Stimulate advanced technologies (cont.)

Measure: Cumulative number of patents filed



Measure: Cumulative number of technical publications



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TA - National Institute of Standards & Technology

Stimulate advanced technologies (cont.)

Objectives and Key Strategies

Objectives	Key Strategies
Encourage industry to increase investment in R&D for high-risk, broad-impact technologies.	• Identify and fund ATP-industry partnerships for the development of emerging, infrastructural, and/or multi-use technologies. • Emphasize cooperative R&D projects. • Expand partnership activities with both the public and private sectors, and strengthen linkages to external sources of innovation—such as small entrepreneurial firms, universities and other sources of basic research, and new research consortia.
Accelerate the broad diffusion of ATP-funded technologies.	• Facilitate linkages between ATP award winners and other financial and organizational resources. • Encourage rapid dissemination of information about ATP-funded technologies.

Cross-Cutting Issues	External Factors
• Scientists and engineers from a wide variety of government agencies and laboratories participate in ATP's Source Evaluation Boards.	• ATP-funded projects by design involve long time horizons and high levels of technical risk. Particularly at this early stage, assessing long-term outcomes as well as progress toward those outcomes entails fundamental empirical uncertainties and methodological challenges.

Resource Requirements

ATP request: $251,500 Thousand

280 FTE / Skills: ATP professional staff consists of 51% Ph.D., 26% MA/MS, 19% BA/BS

Estimated ATP IT obligations: $4,425 Thousand

TA - National Institute of Standards & Technology

Assist small manufacturers

Manufacturing Extension Program:
Improve the technological capability, productivity, and competitiveness of small manufacturers.

Rationale for / Comments on Performance Goals:

While the U.S. manufacturing sector as a whole is among the most productive in the world, small manufacturers in the United States consistently lag behind their larger counterparts. Large firms typically have greater financial, technical, and human resources available for production modernization and continuous performance improvement. Yet the Nation's nearly 400,000 small plants and factories employ about 12 million people—nearly two-thirds of all manufacturing jobs—and produce intermediate parts and equipment that contribute substantially to the value of finished products. Due to the pervasive role of small firms in the manufacturing supply chain, the future productivity of the Nation's overall supply base will rest largely on the ability of small firms to improve their quality, raise their efficiency, and lower their costs.

The comparatively low productivity growth of small U.S. firms can be attributed to numerous factors, including technical, cost, and information barriers. Through the Manufacturing Extension Partnership (MEP) Program, NIST helps to overcome these barriers by providing information, decision support, and implementation assistance in adopting new and more advanced manufacturing technologies, techniques, and business practices.

The MEP provides key support to the Secretary's Broadening Trade initiative by partnering with ITA to expand the participation of small manufacturers in international trade.

In addition to program guidance provided by NIST management, MEP evaluates its performance through a combination of methods including: 1) independent evaluation of MEP program plans and policies by the newly established MEP National Advisory Board; 2) legislatively-mandated independent panel reviews of individual MEP center operations and outcomes conducted against criteria adapted from the Malcolm Baldrige National Quality Award; and 3) regular program oversight and periodic review of individual MEP center operations and outcomes by NIST staff. These reviews and assessments utilize a variety of metrics, including output tabulations; interim impacts on client competitiveness, derived from regular surveys conducted by the Bureau of the Census; and analysis of more detailed information regarding the operations and performance of individual centers. The following four performance measures record the impact of MEP assistance on several key business indicators, which illustrate MEP's impact on key aspects of its clients' competitiveness.

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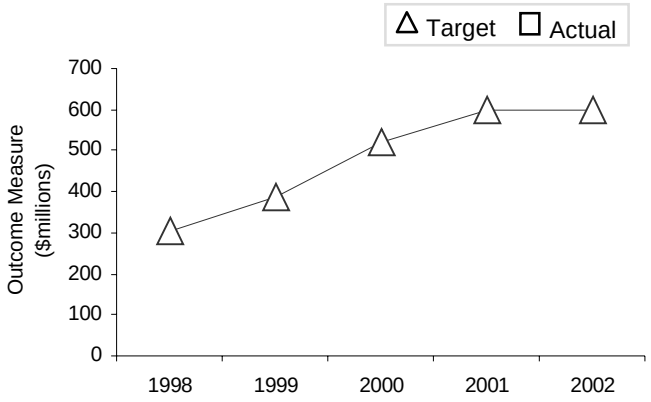
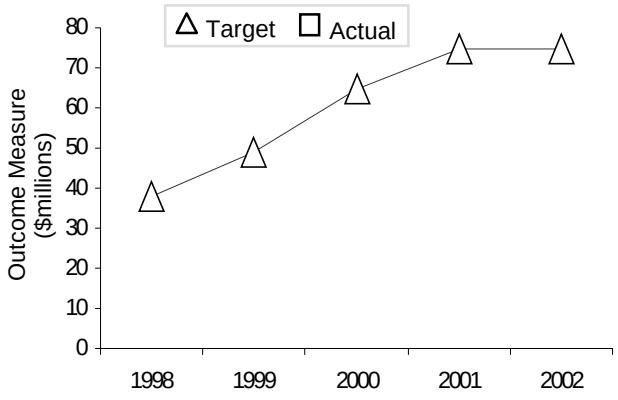
Assist small manufacturers (cont.)

Measure: Increased sales attributed to MEP assistance



Measure: Labor and material savings attributed to MEP assistance



Data Validation and Verification

Data collection: MEP centers submit activity data reports to Bureau of the Census, which uses these reports to plan and conduct client surveys. Census compiles survey data, ensures confidentiality, and forwards data results to MEP.

Frequency: Annual.

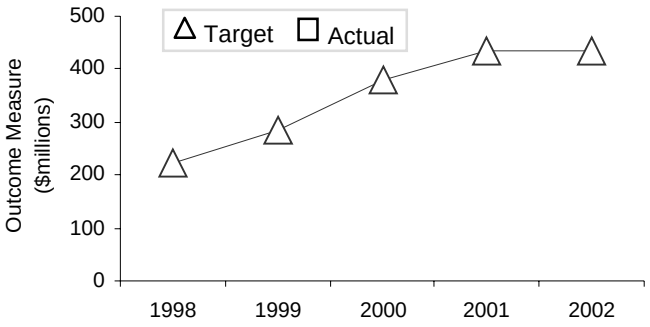
Data storage: MEP cumulates and stores Census survey data in an Oracle database.

Verification: Surveys record client-attested assessments of the business results attributed to completed MEP assistance. Data are not comprehensive, for two reasons: 1) data measure only specific impacts within a calendar year, hence cumulative or recurring benefits are not measured; and 2) many benefits of MEP are intangible, difficult to quantify, and/or are qualitative in nature.

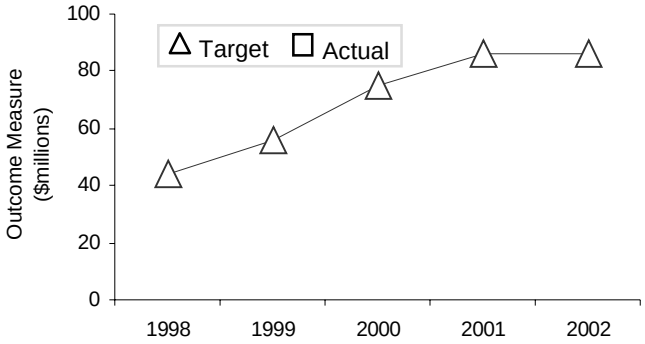
TA - National Institute of Standards & Technology

Assist small manufacturers (cont.)

Measure: Capital investment attributed to MEP assistance



Measure: Inventory savings attributed to MEP assistance



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TA - National Institute of Standards & Technology

Assist small manufacturers (cont.)

Objectives and Key Strategies

Objectives

Transform a larger percentage of the Nation's small manufacturers into high performance enterprises.

Key Strategies

- Provide MEP Centers and clients with access to a wider range of technologies and business practices by generating an integrated knowledge network focused on high performance processes, market dynamics, technological trends, and competitiveness indicators.
- Improve each Center's effectiveness and efficiency by improving the level of technical capacity in the field, conducting market research on trends involving broad segments of MEP's client base, and assisting Centers in developing effective management information systems.

Cross-Cutting Issues

- MEP collaborates with a wide range of agencies, including Agriculture (collaboration on serving forestry and food processing industries and on promoting sustainable development); DoD (regional recycling efforts with the Navy); DoE (technology development from DoE labs; Energy, Environment and Manufacturing Assessment Protocol); EPA (Pollution Prevention; Environmental Best Practices for Metal Finishing and Printing Industries; Environmental Service Provider Networks; Recycling Market Development; Energy, Environment and Manufacturing Assessment Protocol (w/DOE); collaborative promotion of sustainable development); HHS (collaboration with NIOSH re. Center health & safety services); HUD (Center workforce development model being adapted to HUD empowerment zones); DoL (One Stop Career Center; School to Work Project); NSF (adapting NSF curricula); and NASA (NTTC Technology Mining Project; field agent training); Bureau of Census Impact Agencies.

External Factors

- Outcome projections assume lifting of the sunset restriction on federal funds beyond sixth year of the centers; if the sunset restriction is not lifted, these out-year performance estimates will decrease as the number of centers that receive federal funding declines.

Resource Requirements

MEP request: $99,836 Thousand; plus estimated reimbursable obligations of $50 Thousand

112 FTE / Skills: MEP professional staff consists of 17% Ph.D., 72% MA/MS, 11% BA/BS

Estimated MEP IT obligations: $1,958 Thousand

TA - National Institute of Standards & Technology

Promote performance and quality management

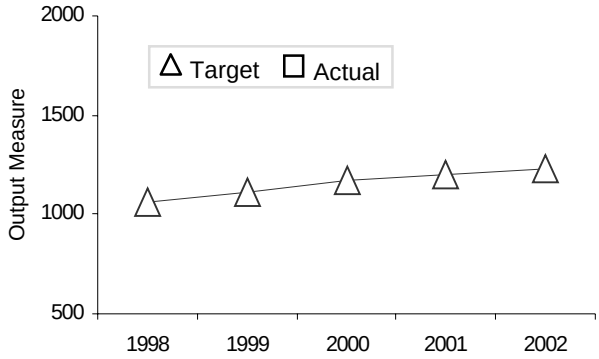
The Baldrige National Quality Program:
Assist U.S. businesses and other organizations in continuously improving their productivity and efficiency by adopting performance and quality management practices.

Rationale for /Comments on Performance Goals:

As the 21st century approaches, quality and performance improvement have become requirements—not options—for competitive businesses and high-performance organizations of all types. Through the Malcolm Baldrige National Quality Program (BNQP), NIST provides a systematic and well-tested set of business values, performance criteria, and assessment methods that all organizations can adopt to improve their productivity and effectiveness. Overall, the BNQP catalyzes the business community to define what organizations must do to improve their performance and attain (or retain) market leadership, and it provides a mechanism for broadly disseminating that information.

The Baldrige National Quality Program evaluates its performance through a combination of methods including: 1) independent expert review of all aspects of the BNQP's plans and operations by its Board of Overseers, combined with other annual reviews provided by the Panel of Judges and the Foundation for the Malcolm Baldrige National Quality Award (MBNQA); 2) output tabulations, such as the number BNQP *Criteria for Performance Excellence* distributed by mail; and 3) periodic surveys and other assessments of the program's relevance to corporate performance. In FY 1999, the BNQP will complete a formal economic impact assessment to evaluate the Program's longer-term economic impact on corporate performance management practices, profitability, and other business factors.

Measure: Number of applications to the MBNQA and Baldrige-based state quality programs



Data Validation and Verification

Data collection:	Application data are collected and tracked by the Baldrige National Quality Program.
Frequency:	Based on the application cycle. Data from state programs is collected annually.
Data storage:	Baldrige National Quality Program.
Verification:	Data represent direct and verifiable counts of BNQP business activities and processes.
Comments:	BNQP's information dissemination and promotional activities are designed to support performance and quality awareness efforts at all levels.

TA - National Institute of Standards & Technology

Promote performance and quality management (cont.)

Objectives and Key Strategies

Objectives	Key Strategies
Develop and continuously improve the Malcolm Baldrige National Quality Award, broadly disseminate criteria for evaluating performance, and promote quality awareness and performance excellence.	• Continue to work with the education and health care communities to establish full-fledged award programs for these sectors. • Prepare educational materials (such as case studies) and acquire the capacity to conduct research and generate documents that will 1) identify best practices and articulate the underlying principles of leading management practices and performance evaluation techniques; and/or 2) help businesses and other organizations initiate and sustain performance improvement strategies.
Promote quality awareness and business excellence practices of small service businesses and manufacturers.	• Use flexible partnerships to reach and address the needs of smaller firms. • Lead an expanding national system of state and local quality programs. • Prepare educational materials designed to help businesses and other organizations initiate and sustain performance improvement strategies.

Cross-Cutting Issues

- The BNQP provides OPM with Baldrige Criteria, Processes, and Baldrige Examiner Board members for the Presidential Quality Award.

External Factors

- BNQP's ability to further promote quality awareness and performance excellence will depend in part upon acquiring the formal authority to conduct research, develop data on best practices, and generate self-assessment primers and other educational materials.

Resource Requirements

BNQP request: $5,046 Thousand; plus estimated reimbursable obligations of $2,000 Thousand

40 FTE plus 2 reimbursables
Skills: BNQP professional staff consists of 11% Ph.D., 44% MA/MS, 33% BA/BS

Estimated BNQP IT obligations: $429 Thousand

TA - Office of the Under Secretary / Technology Policy

Analyze and develop technology policies

Improve technology's contribution to U.S. competitiveness, economic growth, and job creation through the analysis, development, advocacy, and implementation of national technology policies and programs.

Rationale for/Comments on Performance Goals:

Technological innovation and industrial competitiveness depend upon a supportive policy environment to overcome market inefficiencies in innovation, investment, and competition. To this end, US/OTP coordinates and leads several Presidential Initiatives designed to recognize and promote technological achievement (the National Medal of Technology), generate new technologies with high potential for socio-economic advancements (Partnership for a New Generation of Vehicles-PNGV), and improve the conditions for international technology cooperation (U.S.-Israel Science and Technology Commission-USISTC). In addition, US/OTP works closely with the States to manage and improve complex policies that affect innovation, such as regulatory policies that influence innovation in telemedicine, environmental technologies, building and construction, and other areas.

More generally, US/OTP promotes science and technology policy development and advocacy through analyses of competition in technology-oriented industries; the impact of various regulatory, tax, legal, and other public policies on corporate behavior; and the foreign policy and competitive context in overseas markets. In all of its activities, US/OTP seeks to coordinate federal and state policy efforts in ways that support a truly national approach to science and technology policy.

US/OTP evaluates its performance and plans its work through several evaluation mechanisms: extensive and ongoing consultation with public and private sector stakeholders, selected peer review, and output tracking. These sources of performance evaluation provide diverse and useful information for managing US/OTP's policy development, coordination, and analysis roles. However, no single output measure can capture US/OTP's diverse activities, and many core activities—such as policy advisory and advocacy functions—are difficult to characterize quantitatively.

For GPRA purposes, US/OTP provides the number of reports published annually as a partial indicator of analytical output. In FY 2000, US/OTP expects to publish five reports on critical technology policy issues. These reports are designed to inform and influence key members of the science and technology policy community, and are distributed to a core list that includes members of Congress, the Office of Science and Technology Policy, and other Administration offices, leading trade associations and think tanks, and numerous industry and academic leaders who are active on science and technology policy issues.

The longer-term outcomes that derive from US/OTP reports and other outputs cannot be measured reliably, for at least two fundamental reasons: First, outcomes associated with knowledge generation (reports, analyses, workshops, conferences, etc.) typically are extended in time, intangible in nature, and diffuse in scope. Second, policy analyses and advocacy efforts may influence the attitudes and positions of key parties, but actual policy outcomes are determined by multiple institutional, organizational, economic and political factors. US/OTP has begun to explore the feasibility and cost effectiveness of interim outcome measures, such as citation analysis and customer surveys.

TA - Office of the Under Secretary / Technology Policy

Analyze and develop technology policies (cont.)

Measure: Reports Published

Year	*1998*	*1999*	*2000*	*2001*
Target	5	5	5	5
Actual	5	TBD	TBD	TBD

Data Validation and Verification

Data collection: All data are collected and maintained within each respective program office.

Frequency: US/OTP data is collected on an ongoing basis.

Data storage: US/OTP.

Verification: This measure is a direct and verifiable indicator of analytical output.

Comments: Output data are not comprehensive. In particular, US/OTP policy advocacy efforts consume a considerable portion of staff time and resources, but can be represented only by detailed activity metrics. As with most policy development and analysis operations, long-term outcomes cannot be isolated from other contributing factors, and consequently cannot be measured reliably.

Objectives and Key Strategies

Objectives	Key Strategies
Coordinate and lead key interagency technology programs.	Lead and administer presidential initiatives designed to: • recognize and promote technological achievement (the National Medal of Technology); • generate new technologies with high potential for socio-economic advancements (PNGV); and • improve the conditions for international technology cooperation (USISTC).
Coordinate and lead interagency efforts to strengthen technology partnerships between states and the Federal government.	• Develop and coordinate the U.S. Innovation Partnership to improve how state and federal R&D agencies manage complex policies that affect innovation, such as regulatory policies that influence innovation in telemedicine, environmental technologies, building and construction, and other areas. • Develop and administer the EPSCoT program to improve the infrastructure and general business conditions for technology-led economic growth in particular regions of the United States.
Improve the information base for science and technology policy.	• Generate reports and analyses of foreign technology policies and domestic industrial and technological trends, including but not limited to: competition in technology-oriented industries; the impact of various regulatory, tax, legal, and other public policies on corporate behavior; and the foreign policy and competitive context in overseas markets.

TA - Office of the Under Secretary / Technology Policy

Analyze and develop technology policies (cont.)

Cross-Cutting Issues

- Through the Committee on Technology of the President's National Science and Technology Council, the Under Secretary helps to establish clear national goals for federal science and technology investments and to ensure that federal civilian R&D priorities reflect the requirements of industry customers. The Committee currently is coordinating several major Administration R&D initiatives in materials, construction and building, manufacturing infrastructure, electronics and automotive technologies.

External Factors

- Outputs associated with coordination and leadership functions depend in part upon the interest and commitment of numerous public and private sector participants operating at the state and federal levels. US/OTP can influence but not control other participants.

Resource Requirements

US/OTP request: $8,972 Thousand; plus estimated reimbursable obligations of $0.575 Thousand

50 FTE plus 1 reimbursable FTE
Skills: total US/OTP staff consists of 11% Ph.D., 19% MA/MS, 32% BA/BS

Estimated US/OTP IT obligations: $288 Thousand

TA - National Technical Information Service

Collect and disseminate technical information

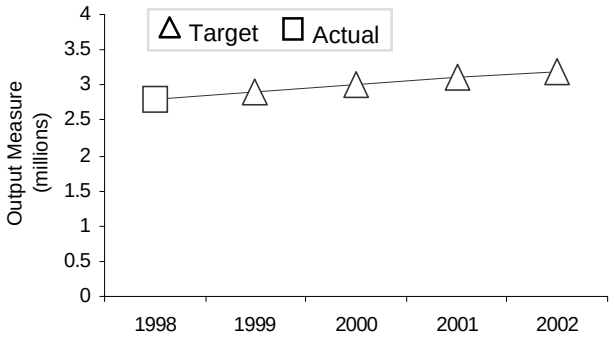
Collect, preserve, and disseminate government technical, scientific, and business information.

Rationale for/Comments on Performance Goals:

NTIS operates a central clearinghouse of technical information which is useful to American business and industry. NTIS is directed to collect information from international sources; classify, maintain, and disseminate the information in the forms and formats most useful to its customers; develop electronic and other new methods and media to disseminate information dissemination; provide information processing services to other federal agencies; and charge reasonable fees for its products and services that permit NTIS to recover its costs.

NTIS contributes directly to the Department's effort to provide U.S. industry and the Nation with a world-class scientific and technical information base. NTIS' output directly enhances the Nation's scientific and technical information base, which in turn supports virtually all segments of the Nation's scientific and technological enterprise.

Measure: Items in archive



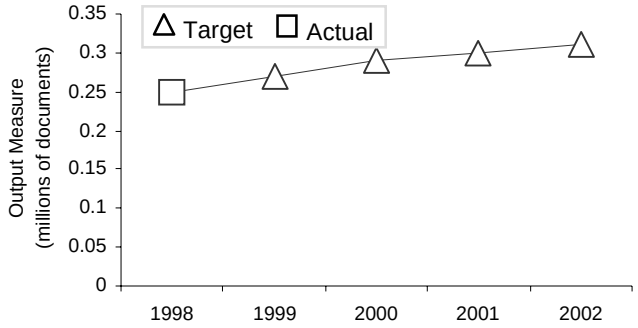
Data Validation and Verification

Data collection:	NTIS operates and maintains internal systems for processing collected information into available products. NTIS records every transaction using a commercial order processing system modified to meet its specific needs. NTIS accounting and budget offices analyze and report performance output data as well as revenue and cost data to management.
Frequency:	Internal management activity reports are produced daily, with monthly summaries.
Data storage:	All performance-related information is stored within the NTIS order processing system.
Verification:	Data verification and validation is provided through regular internal and independent auditor reporting.

TA - National Technical Information Service

Collect and disseminate technical information (cont.)

Measure: Documents Reproduced from Electronic Media



Data Validation and Verification

Data collection:	NTIS operates and maintains internal systems for processing collected information into available products. NTIS records every transaction using a commercial order processing system modified to meet its specific needs. NTIS accounting and budget offices analyze and report performance output data as well as revenue and cost data to management.
Frequency:	Internal management activity reports are produced daily, with monthly summaries.
Data storage:	All performance-related information is stored within the NTIS order processing system.
Verification:	Data verification and validation is provided through regular internal and independent auditor reporting.

The number of items collected by NTIS and the dissemination demand can vary with the output of government agencies during any given period. Overall, dissemination metrics adequately convey NTIS' performance relative to its statutory responsibilities. However, they do not comprehensively represent NTIS' output and performance (for instance, NTIS also assists agencies in the development and production of their information). Moreover, these measures do not convey the impact of all of NTIS' services.

TA - National Technical Information Service

Collect and disseminate technical information (cont.)

Objectives and Key Strategies

Objective	Key Strategies
Play a leadership role in assisting federal agencies with dissemination of their scientific, technical, and business information.	• Leverage NTIS experience with information dissemination. • Leverage NTIS joint venture authority to broaden distribution
Provide services and infrastructure to control scientific, technical, and business related information, and increase the effectiveness of systems for locating and delivering information in the form required by customers.	• Leverage NTIS investment in production technologies. • Leverage NTIS core capabilities for information management. • Leverage NTIS sales and distributor channels. • Develop information products and services for agencies.

Resource Requirements

NTIS request: $2,000 Thousand; plus estimated reimbursable obligations of $60,000 Thousand

23 FTE plus 377 reimbursable FTE
Skills: Total NTIS staff consists of 0% Ph.D., 9% MA/MS, 25% BA/BS

Estimated NTIS IT obligations: $7,814 Thousand